

PHOTO QUIZ

PEER REVIEWED

# A Painless Nodule on the Gingiva of a 14-Year-Old Girl

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Volume 59 - Issue 11 - November 2019

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**Citation:**

Joy D, Upadhyay K, Acharya R. A painless nodule on the gingiva of a 14-year-old girl. *Consultant*. 2019;59(11):327-328.

A 14-year-old girl presented to the clinic for preoperative clearance for a dental procedure.

**History.** The girl had had an ongoing problem with dental crowding in the area of the upper central incisors, and a previous computed tomography scan of the head had identified a cyst emanating from the area of the dental crowding and extending into and obliterating the maxillary sinuses. The patient stated that she had come to the clinic in order to be cleared for a dental procedure for which she had waited a long time.

**Physical examination.** She denied dental pain, oral ulcers, oral edema, oral erythema, fever, chills, nausea, and headache. Her vital signs were within normal limits for her age, and she was in no acute distress. On physical examination, she smiled to show her teeth and to allow

examination of the area of deformity. There was mild erythema of the gums in the area with no tenderness. On further examination using a tongue depressor to raise the upper lip and visualize the entire gingiva, a soft, whitish pustule was noted just above the maxillary central incisor (**Figure**).



**Figure.** A soft, whitish pustule just above the maxillary central incisor.

What's your diagnosis?

- A. Periapical dental abscess
- B. Dental cyst
- C. Gingival overgrowth
- D. Pyogenic granuloma

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## Answer: Periapical dental abscess

An acute periapical abscess is the most common form of dental abscess.<sup>1</sup> It is caused by an infection of the root canal of the tooth (pulpitis).<sup>1</sup> Risk factors include broken, decayed, or maloccluded teeth, and prior failed root canal therapy. These infections are caused almost exclusively by anaerobic bacteria.<sup>1</sup> Chronic infection may lead to bone resorption around the root of the infected tooth and start draining into the surrounding areas, causing facial swelling. If untreated, acute periapical abscess can also lead to osteomyelitis and cellulitis.

The etiology is usually polymicrobial, and the common causative organisms predominantly belong to the following phyla: Bacteroidetes, Firmicutes, Spirochaetes, Synergistetes, Proteobacteria, Fusobacteria, and Actinobacteria.<sup>2</sup> Of note, in localized juvenile periodontitis, *Aggregatibacter* (formerly *Actinobacillus*) *actinomycetemcomitans* infection should be considered when choosing treatment.<sup>3</sup>

Differential diagnoses of periapical dental abscess include dental eruption cyst or hematoma, gingival overgrowth (either inflammatory or drug-induced by, for example, phenytoin, nifedipine, or cyclosporine), hemangiomas, fibromas, and pyogenic granulomas. A parulis (gumboil) can form in association with the abscess at the exit point of the draining fistulous tract. It appears as a soft, solitary papule located apical to the abscessed tooth.

The presentation of periapical abscess can be varied. Acutely, patients usually have significant tooth pain and swelling of the surrounding gingiva.<sup>2</sup> Chronic infection is a more indolent form, with low-grade inflammation and partial drainage of infected material. Symptoms include mild dull aching pain. Periapical abscess is rarely asymptomatic, as in our patient's case. Signs of systemic involvement such as fever may indicate infiltration of the infection into the maxillary or mandibular bones. A dental radiograph is not usually needed to make a diagnosis of an abscess, but it can reveal bone loss along the ends of the dental roots, indicating an infection or

abscess. The variations in presentation most likely are due to the diversity of the microbiota causing the infections, host resistance factors, and regional anatomy.

Antibiotic therapy is not normally indicated unless the patient is in a high-risk category due to immunosuppression or cardiac abnormality.<sup>4</sup> However, many dentists prefer to start antibiotics to prevent dissemination of infection. Antibiotic therapy is also indicated in patients showing systemic signs of infection.<sup>4</sup> Our patient was treated with amoxicillin and, later, root canal therapy to clean and remove the infection. This led to the complete resolution of the dental abscess.

Penicillins are the first-line agents if antibiotic therapy is chosen. Clindamycin is the antibiotic of choice in penicillin-allergic patients.<sup>5</sup> Metronidazole's lack of activity against aerobes and weak activity against anaerobic cocci make it a poor choice in patients with dental abscesses.<sup>5</sup>

Performing a thorough dental examination is vital, even if the patient denies symptoms.

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